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EXAMINER KAZEMINEZHAD, FARZAD				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/581,434

Applicant(s)

SATO, YASUSHI

Examiner

FARZAD KAZEMINEZHAD

Art Unit

2626

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 1-6, 16, 17, 19, 21, 22, 25, 26 and 29-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/24/2010 has been entered.

Response to Amendment

2. In response to the office action from 12/30/2009, the applicant has submitted an amendment, amending claims 7, 11, 14, 18, 20, 23-24, 27-28, 32-33, cancelling claims 16-17, 29, 21-22, 25-26, 29-31, while arguing to traverse the prior art rejections. Applicant's arguments have been fully considered but the previous rejection is maintained for the reasons explained below in the response to arguments.

3. In response to the amendment to claim 11, the examiner has withdrawn the previous 35 U.S.C. 112 second rejection of the said claim.

Response to Arguments

4. Page 10 provides an overview of the previous office action and the latest amendments to the independent claim 7. On pages 11-12 to the end of the first ¶ on page 12, the applicant has argued the seventh claim to be allowable due to the latest amendments. For that the applicant is respectfully directed to the office action that follows.

5. The remainder of page 12 also provides arguments as to why the prior art of record fail to teach amended features of claims 14, 24 and 33 and therefore the applicant is respectfully directed to the office action that follows.

Claim Objections

6. Claim 32 is objected to because of the following informalities: in the third limitation, " **is multiplied** " is redundant as the sentence begins with "multiplying" . Appropriate correction is required.

7.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 7-15, 18, 20, 23-24, 27-28, 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi, and further in view of Takagi et al. (US Patent 6,980,956).

Regarding claim 7, Sekiguchi does teach a device control device (Abstract, Col. 1 lines 11-15 teach a data processing in a sensor used in a robot for providing instructions to a robot, or as disclosed in Col. 1 lines 49-53 electric home appliances such as an air conditioner) comprising:

input information recognition means which recognizes input information

to be input (Col. 3 lines 59-61 and Col. 23 lines 9-10 referring to unit 41 in Fig. 2 teach a unit for input processing of an input word indicating an operation of the said apparatus (e.g. robot));

process-item data storing means which stores a plurality of process items for executing processes corresponding to recognized information recognized by the input information recognition means (2) (Col. 3 lines 20-25 teach a database in which words corresponding to instructing operations of the apparatus (i.e. words associated with a plurality of process items for executing operations (processes)) are stored; each word is processed (recognized) by natural language information; Col. 7 lines 53-55 referring to Fig. 2 teach these words are stored in the database unit 42); and

transition-definition data storing means which stores plural pieces of transition definition data defining transition from one process item in the plurality of process items to another process item (Col. 3 lines 35-37 teach a behavior pattern is associated with each word stored in the database unit 42 in Fig. 2 where each behavior pattern defines a certain state of the apparatus and thereby triggering it will result in a transition of the state of the apparatus; Col. 7 lines 63-66 teach the behavior database unit 45 in Fig. 2 stores the behavior data (i.e. transition-definition data)),

wherein

each piece of said transition definition data includes a condition corresponding to input information (Col. 9 lines 37-46 teach a behavior selector unit 44 in Fig. 2 (associated with the said transition definition data) which can select a behavior pattern corresponding to a certain state or condition of the apparatus which can best match

(correspond to) an input word which does not have any stored data corresponding to it),
said recognized information includes a likelihood indicating a status of matching between said input information and the condition of said transition definition data (Col. 13 lines 43-51 teach a characteristic comparison classification unit 3 (Fig. 1) (associated with behavior (transition definition data)) residing in a sensor (part of the apparatus (e.g. robot)) are utilized to compare (determine the likelihood of matching between) input data corresponding to recognized information to the input (unit 1) with words (corresponding to actions) registered in database; Col. 14 lines 13-21 teach the comparison is made by using a formula which enables to judge if two values are matched based on their "distance" which is numerical value; Col. 14 lines 40-41 teach the formula enables judging if two values are matched the smaller that "distance" is and thereby that "distance" is inversely correlated with their likelihood of matching; Col. 14 lines 46-49 teach that formula is specifically utilized in matching input data (information) and characteristic data (which is correlated with behavior data (transition-definition data)),

a piece of transition definition data is selected based on said discrimination result, and a status is transitioned to a process item designated by the selected transition definition data (Col. 7 lines 56-62 and Col. 23 lines 19-23 teach a behavior execution unit 46 in Fig. 2 which executes (thereby discriminates) the behavior pattern corresponding to a recognized word associated with the behavior resulting in a transition of state of the device (e.g. robot));

Sekiguchi does not teach a weighting factor corresponding to a condition

associated with the input information associated with a transition definition data and
said weighing factor included in said transition definition data being multiplied with
said likelihood included in said recognized information, thereby obtaining a result of
discrimination for the condition of each transition definition data;

Takagi et al. does teach a weighting factor corresponding to a condition
associated with the input information associated with a transition definition data (Col. 7
lines 24-29 and also lines 51-55 teach an "improvement ratio L" (weighting factor), or
Col. 7 lines 35-37 and or lines 60-65 teach "the number of behaviors transitioned M"
(weighting factor) used in modifying a transition probability to be associated with a voice
stimulus (Col. 12 lines 59-60) (i.e. input information) responsible for commanding a
robot; Col. 7 lines 5-6 teach the said transition probability to be associated with robot's
behavior);

said weighing factor included in said transition definition data being multiplied
with said likelihood included in said recognized information, thereby obtaining a result of
discrimination for the condition of each transition definition data thus stored (according
to the Eq. in Col. 7 lines 25-27 and or lines 53-55, the factor "L" (weighting factor) is
included in both transition probability equations (transition definition data) and it
multiplies the original transition probability (likelihood) attributed to the speech
recognitions (see below), enabling modification of the original (stored (see below))
transition probability P_0 (likelihood) to $P_0 \cdot$ (discrimination condition of the transition
probability) using the factor "L" (weighting factor) multiplying P_0 (likelihood) ; Col 11
lines 49-55 teach the behavioral command module MO4 (Fig. 4) receives the speech

recognition output (e.g. P_0) by the matching unit 32 (Fig. 8), determines the evaluation (e.g. the improvement ratio "L" (weighting factor)) and based on that changes the transition probability (determines the discrimination) as a behavioral model shown in steps S5 and S6 in Fig. 6; this evaluation for instance could have positive or enhancing impact based on the user input such as "praise" (Col. 7 line 10) or a negative impact such as "scolding" (Col. 7 line 10) and basically alters robot's response based on user input; determining a new transition probability P_0' from the old transition probability P_0 by the CPU module 20 (Fig. 3) requires storing the latter in memory such as the nonvolatile memory module 23 in Fig. 3).

It would have therefore been obvious to one with ordinary skill in the art at the time the invention was made that utilizing the transition probability modules and methods of Takagi et al. into the device operation apparatus of Sekiguchi by incorporating Takagi et al.'s modules MO2 and MO4 in Fig. 4 of and their respective methods into the behavior selector unit 44 of Fig. 2 of Sekiguchi would enable the latter to multiply a weight factor by each state (behavior or process item) determined to correspond to input command obtained by the distance similarity formula (likelihood) that the device is commanded to transform, where the weight factor represents parameters of the stimulus such as the praise, scolding or loudness of the voice of the user commanding the device which will alter the resulting behavior of the device.

Regarding claim 8, Sekiguchi does teach the device control device according to claim 7, wherein when a jump is made from a predetermined process item to a process

item or transition definition data which is not defined by transition defining data, transition definition data corresponding to the process item or transition definition data jumped from said predetermined process item is generated (Col. 9 lines 37-48 teach if a word data Wd (associated with a behavior or state of the device (e.g. robot)) is not recognized (it is not defined and nor stored in behavior data base 45 in Fig. 2), the behavior selector unit 44 utilizes a combination of behavior patterns that are already stored in unit 45 and instructs the behavior execution unit 46 to execute it (i.e. to jump into the state corresponding to the behavior combination); Col. 10 lines 21-27 teach that if the final state which the device (e.g robot) has "jumped" is judged "OK", then the word data Wd is stored in the behavior database).

Regarding claim 9, Sekiguchi does not specifically disclose the device control device according to claim 7,

wherein a transition constant which is a calculation standard for said weighting factor is set as a constant corresponding to said transition definition data, and

a weighting factor of transition definition data relating to another process item linked to one process item whose status is transitioned is calculated by accumulating said constants from the constant for transition definition data relating to one process item to the constant for transition definition data relating to the another process item.

Tagaki et al. does teach a transition constant which is a calculation standard for calculating said weighting factor and set as a constant corresponding to said transition definition data (Col. 7 lines 60-65, the factors 1/M and 1 or lines 25-30 the

factors L and 1 in the factor $(L+1)$ comprise constants (transition constants (see below)) enabling calculating the change (as weighting factors) in transition probability (transition definition data) corresponding to the robot behavior transitions; Col. 5 lines 51-67 and Col. 6 lines 1-3 referring to the modules MO2 and MO4 in Fig. 5 teach the transition probability of making transition from one state (process item) to another state (process item) is updated by raising or lowering it by a predetermined (constant) amount of for example 10% which in one example in Col. 7 lines 24-29 it is assigned the value L and for Col. 7 lines 60-65 the value $1/M$ and these constants according to Col. 13 lines 32-37 are correlated to the way a stimulus by a user such as tone of his voice is inputted);

and

a weighting factor of transition definition data relating to another process item linked to one process item whose status is transitioned is calculated by accumulating said constants from the constant for transition definition data relating to one process item to the constant for transition definition data relating to the another process item (Col. 7 lines 25-27 teach a formula using the weighting factor $(1+L)$ which is a sum (an accumulation) of constants 1 and L where the former is associated with the previous state P_0 (corresponding to the previous process item or behavior) and the latter to the updated state " $P_0 L$ " (another process item) which includes the predetermined constant L in determining the final transition probability P_0' (the final process item linked to the process item described by P_0));

For obviousness to combine see claim 7.

Regarding claim 10, Sekiguchi does not teach the device control device according to claim 9, wherein said transition constant changes, provided that transition definition data relating to said transition constant is selected.

Takagi et al. does teach the transition constant changes, provided that transition definition data relating to said transition constant is selected (Col. 7 lines 60-65 teach a formula which shows that the transition probability and thereby the transition constant which is attributed to the percentage of amount of change that the transition probability undergoes, changes as a function of the number of behaviors that the device is required to transfer to acquire the behavior consistent with the transition definition data; likewise the formula in Col. 7 lines 25-30 give a range to L ($0 < L < 1$) indicating the ability to change L (transition constant)).

For obviousness to combine see claim 7.

Regarding claim 11, Sekiguchi does not specifically teach the device control device according to claim 7, wherein a weighting factor of transition definition data relating to a predetermined process item is set higher than a predetermined value.

Tagaki et al. does teach the device control device according to claim 7, wherein a weighting factor of transition definition data relating to a predetermined process item is set higher than a predetermined value (The improvement ratio L (weighting factor) in Col. 7 lines 25-27 or 50-55 has a lower bound (i.e. it is greater than the predetermined value) of 0; likewise M (weighting factor) in Col. 7 lines 60-65 has the lower bound of 1).

For obviousness to combine see claim 7.

Regarding claim 12, Sekiguchi does teach the device control device according to claim 7, wherein said input information is a speech signal (Col. 7 lines 49-51 teach that the input process unit 41 in Fig. 2 is capable of receiving "word spoken by a man" (i.e. speech), and Col. 9 lines 18-20 teach the unit to possess speech recognition function) and

the condition of said transition definition data is a word subject to speech recognition (Col. 9 lines 14-17 teach there exists an association between each spoken word W and a word data Wd which is stored in the behavior database unit 45 and which is associated with a behavior (causing or defining a transition of state of the device (e.g. robot)); i.e., the stored word data Wd defines a condition or state of the device; Col. 9 lines 32-36 teach if there exists a match (speech recognition is successful) between word data (input) and one of the stored behavior data (transition definition data) then the behavior pattern is executed).

Regarding claim 13, Sekiguchi does teach the device control device according to claim 7, wherein a plurality of conditions are set for said transition definition data (Col. 9 lines 63-67 and Col. 10 lines 1-3 teach a user creating (setting) criteria (plurality of conditions) for each behavior (corresponding to a state of the device (e.g. robot) which can thereby trigger a state transition upon execution) and storing them in the criteria database unit 51 in Fig. 3).

Regarding claim 14, Sekiguchi does teach a device control device that has process-item data storing means which stores a plurality of process items for executing processes corresponding to recognized information obtained by recognizing input information (Col. 3 lines 20-25 teach a database in which words corresponding to instructing operations of the apparatus (i.e. words associated with a plurality of process items for executing operations (processes)) are stored; each word is processed (recognized) by natural language information; Col. 7 lines 53-55 referring to Fig. 2 teach these words are stored in the database unit 42);

and, defines transition from one process item in the plurality of process items to another process item by transition definition data which associates a discrimination condition (Col. 3 lines 35-37 teach a behavior pattern is associated with each word stored in the database unit 42 in Fig. 2 where each behavior pattern defines a certain state of the apparatus and thereby triggering it will result in a transition of the state of the apparatus; Col. 7 lines 63-66 teach the behavior database unit 45 in Fig. 2 stores the behavior data (i.e. transition-definition data), where the said words are each associated with a certain behavior (discrimination condition)),

wherein said recognized information includes a likelihood indicating a status of matching between input information input by a speech and said discrimination condition included in said transition definition data (Col. 13 lines 43-51 teach a characteristic comparison classification unit 3 (Fig. 1) (associated with behavior (transition definition data associated with a behavior (discrimination condition))) residing in a sensor (part of the apparatus (e.g. robot)) are utilized to compare (determine the likelihood (see below)

of matching between) input data corresponding to recognized information to the input (unit 1) with words (corresponding to actions) registered in database; Col. 14 lines 13-21 teach the comparison is made by using a formula which enables to judge if two values are matched based on their "distance" which is numerical value; Col. 14 lines 40-41 teach the formula enables judging if two values are matched the smaller that "distance" is and thereby that "distance" is inversely correlated with their likelihood of matching; Col. 14 lines 46-49 teach that formula is specifically utilized in matching input data (information) and characteristic data (which is correlated with behavior data (transition-definition data associated with the discrimination condition)),

Sekiguchi does not specifically disclose said device changes said weighting factor in accordance with a link to said input information and generates a flowchart of process items by adding or deleting said transition definition data based on a product of said weighting factor thus changed and said likelihood

Tagaki et al. does teach said device changes said weighting factor in accordance with a link to said input information and generates a flowchart of process items by adding or deleting said transition definition data based on a product of said weighting factor thus changed and said likelihood (Col. 7 lines 24-29 and also lines 51-55 teach an "improvement ratio L" (weighting factor), or Col. 7 lines 35-37 and or lines 60-65 teach "the number of behaviors transitioned M" (weighting factor) used in modifying a transition probability to be associated with a voice stimulus (Col. 12 lines 59-60) (i.e. input information) responsible for commanding a robot both to possess a range (change according) to the input nature such as "praise" or scolding according to Col. 7 line 9-11

because according to Col. 7 lines 5-6 teaching the said transition probability to govern (is linked to) robot's behavior; furthermore both the formulas in Col. 7 lines 25-27 and lines 60-65 teach the final transition probability (e.g., P_o' , or P_m " respectively corresponding to the final transition definition data) to depend on the product of "1+L" or "1/M" (weighting factors) respectively and P_o or P_m (the initial transition probability (likelihood) associated with the recognitions); the flow chart of Fig. 6 depicts the new transition probability (transition definition data) to be added with the weight factor ($1/(n-1)$) in step S9 and subtracted (deleted) in step S8 with the same factor).

For obviousness to combine see claim 7.

Regarding claim 15, Sekiguchi does teach the device control device according to claim 14, wherein said process-item data storing means is constituted in such a manner that a process item can be added adequately (Col. 22 lines 40-51 referring to the flow chart in Fig. 24 demonstrates that the process of utilizing the word provision unit 48 (Fig. 2 and 3) and thereby adding a word which defines a state (transition definition data) follows the judgment unit 47 assessing whether or not the input data (corresponding to the transition definition data) abides by the criteria (conditions) set forth in the model and therefore adequate measures are taken before adding the word corresponding to the data to the word provision unit 48).

Regarding claim 18, Sekiguchi does teach the device control device according to claim 14, wherein said input information is a speech signal (corresponds to the first

limitation of claim 12),

the condition of said transition definition data is a target word subject to speech recognition (corresponds to the 2nd limitation of claim 12) ,

said recognized information includes a likelihood indicating a status of matching between the speech signal and the target word of said transition definition data (Col. 13 lines 43-51 teach a characteristic comparison classification unit 3 (Fig. 1) residing in a sensor (part of the apparatus (e.g. robot)) are utilized to compare input data corresponding to recognized information to the input (unit 1) with words (corresponding to actions) registered in database; Col. 14 lines 13-21 teach the comparison is made by using a formula which enables to judge if two values are matched based on their "distance" which is numerical value; Col. 14 lines 40-41 teach the formula enables judging if two values are matched the smaller that "distance" is and thereby that "distance" is inversely correlated with their likelihood of matching; Col. 14 lines 46-49 teach that formula is specifically utilized in matching input data (information) and characteristic data (which is correlated with behavior data (transition-definition data)),

said likelihood corresponding to the target word of said transition definition data is set in said transition definition data (Col. 14 lines 19-22 teach utilizing the numerical distance (inversely correlated to the likelihood of matching) value to determine if the input word matches with a word (target word of said transition corresponding to an action) in the database by comparing the numerical (score) with a

threshold; Col. 15 lines 1-2 teach if the data are matched, they are registered (set) and for the example of comparing an input with data groups (corresponding to transitions) as disclosed in Col. 14 lines 46-49, therefore the input is registered (set) with the data group (transition data))

, and

a piece of said transition definition data is selected in accordance with said likelihood (score), and a state is transitioned to a process item represented by said selected piece of transition definition data (it corresponds to the last limitation of the claim 7).

Regarding claim 20, depending on claim 14, the claim limitations are identical to the limitations of the claim 9, and are therefore rejected under similar rationale.

Regarding claims 23 and 24, the claims' limitations are identical to the limitations of the claims 7 and 14 respectively and are therefore rejected under similar rationale. The speech recognition device is incorporated to the unit 41 (input process unit) of Sekiguchi.

Regarding claim 27 the claim limitations are identical to the limitations of the claim 7 and are therefore rejected under similar rationale. The functions of an agent device are inherently performed by the modules (in both Sekiguchi (Figs. 2 and 3) and Takagi et al. (Fig. 4)) used for the claim 7.

Regarding claim 28 the claim limitations are identical to the limitations of the claim 14 and are therefore rejected under similar rationale. The functions of an agent device are inherently performed by the modules (in both Sekiguchi (Figs. 2 and 3) and Takagi et al.(Fig. 4)) used for the claim 14.

Regarding claim 32-33, the claims correspond to the method limitations of the systems of claims 7 and 14 respectively and are therefore rejected by the same rationale. Sekiguchi and Takagi et al. both teach systems and their respective methods.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FARZAD KAZEMINEZHAD whose telephone number is (571)270-5860. The examiner can normally be reached on M-F 8:30AM-5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis I. Smits can be reached on (571)272-7628. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/FK/

/Talivaldis Ivars Smits/
Primary Examiner, Art Unit 2626

01/21/2011